

MANUFACTURING EXTENSION PARTNERSHIP

Success Stories from the Field

Arbuckle Ranch Inc.

Montana Manufacturing Extension Center

Innovator Reaps Rewards with Collaborative Support

Client Profile:

Arbuckle Ranch, Inc., located in Billings, Montana, is working to develop an effective native grass seed harvester with support from the Montana Small Business Innovative Research (SBIR) program at the Montana Department of Commerce. The Arbuckle team, made up of 2 employees, estimates there are over 100 native grass seeds of economic importance and for which combines and stripper methods are ineffective or unable to effectively dislodge, collect, separate, or convey the seed. Based on successful harvest of five divergent species, the Seedster is expected to effectively harvest most of those species.

Situation:

Native grass seeds ripen at differing times and have other characteristics that make them difficult to harvest. A Phase I SBIR prototype of the Arbuckle Native Seedster established the technical feasibility of the seedster, focused on developing patented seed dislodgement technology of counter-rotating brush and combing drum that "plucks" the ripe seed of native grasses and other plants while leaving the rest of the plant. Solving seed dislodgement is just one of the harvest steps. The process of the harvester consists of four steps: 1) dislodgement of seed; 2) separation of seed from chaff; 3) conveyance of seed to a receptacle; and 4) off-loading of seed. The Phase I prototype in the summer of 2004 demonstrated dislodged seed and only seed; i.e., no chaff, indicating the first two steps were resolved, according to inventor, Lee Arbuckle. He attributed getting to that development stage to SBIR/USDA support and design/manufacturing advice from the Montana Manufacturing Extension Center (MMEC), a NIST MEP network affiliate. Resolution of the final steps was the next innovation hurdle for this enterprising rancher.

Solution:

MMEC assisted with two key areas -- project management and design advice. These included building a design team to work with the inventor, reviewing drawings and recommending several design changes and alternate materials to achieve functionality and weight reduction. In addition, MMEC facilitated a meeting with the National Program Leader of USDA/SBIR Competitive Program unit in the Cooperative State Research, Education, and Extension Service that led to another Phase I SBIR proposal and award of \$80,000. This time the award was to develop the needed pneumatic conveyance technology and off-loading system. As that project neared conclusion of its Phase I this winter, demonstrating the technical feasibility of the pneumatic conveyance system (PCS), the inventor was busy preparing a Phase II proposal. The inventor again tapped design expertise from MMEC in the development of a successful PCS. A successful Phase II award will advance the seed dislodgement mechanism and aid in commercialization of the harvester. Design assistance and project management strengthened the prototypes leading to SBIR Phase I and II awards that have furthered development of this unique native grass seed harvester. The inventor predicts commercialization by late summer 2006.

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Results:

- * Received SBIR Phase I and II awards towards further development of Native Plant Seedster.
- * Predicted commercialization by late summer 2006.

Testimonial:

"Getting to that development stage wouldn't have taken place without SBIR/USDA support; and it wouldn't have taken place without a lot of design/manufacturing advice from MMEC."

Lee Arbuckle, Inventor